

**Math 1050**  
**Exam 1 Review**

Please complete this review on a separate sheet of paper.

Find the real solutions of the equation.

1.  $3y - 1^2 + 5y - 1 + 2 = 0$

2.  $x + 4x^{1/2} - 12 = 0$

3.  $0 = x^6 - 9x^3 + 8$

List the intercepts for the graph of the equation.

4.  $5x + 2y = 10$

5.  $4x^2 + 9y = 36$

6.  $y = x^3 - 2x^2$

Determine whether the graph is symmetric with respect to the  $x$ -axis, the  $y$ -axis, and/or the origin.

7.  $y^2 = x + 5$

8.  $4x^2 - y^2 = 16$

9.  $y = \frac{3x}{x^3 + 5}$

Find the value for the function.

10. Find  $f(-2)$  when  $f(x) = \frac{x-2}{x^2+5}$ .

11. Find  $f(4)$  when  $f(x) = -2x^2 + x - 1$ .

12. Find  $f(-x)$  when  $f(x) = \frac{2x}{x^2-7}$ .

13. Find  $f(x+1)$  when  $f(x) = 3x^2 + 5x - 7$ .

Find the domain of the function.

14.  $f(x) = \frac{5x}{x^2-49}$

15.  $f(x) = \sqrt{15-3x}$

16.  $f(x) = -2|x| + 8$

For the given functions  $f$  and  $g$ , find the requested function and state its domain.

17.  $f(x) = \frac{2x-3}{x+5}$ ;  $g(x) = \frac{2-x}{x+5}$ . Find  $f+g$ .

18.  $f(x) = \sqrt{2x}$ ;  $g(x) = 2x-7$ . Find  $\frac{f}{g}$ .

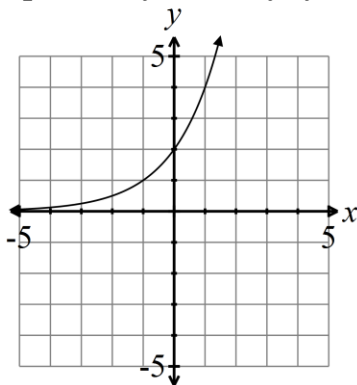
Find and simplify the difference quotient of  $f$ ,  $\frac{f(x+h) - f(x)}{h}$ ,  $h \neq 0$ , for the function.

19.  $f(x) = x^2 + 2x$

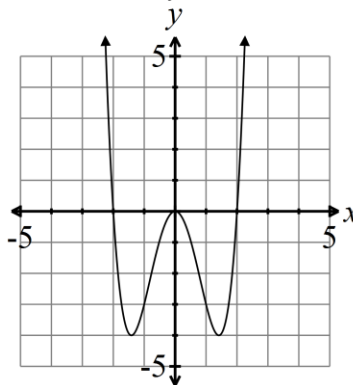
20.  $f(x) = 7x - 8$

Determine whether the graph is that of a function. If it is, use the graph to find its domain and range, the intercepts, if any, and any symmetry with respect to the  $x$ -axis, the  $y$ -axis, or the origin.

21.



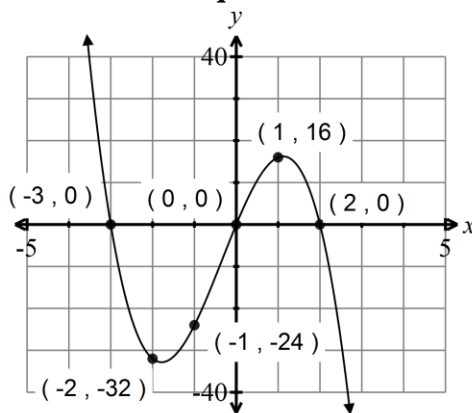
22.



The graph of a function  $f$  is given. Use the graph to answer the question.

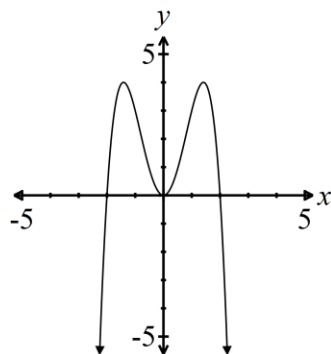
23. Find  $f^{-1}$ .

24. For what numbers  $x$  is  $f^{-1}(x) = 0$ ?

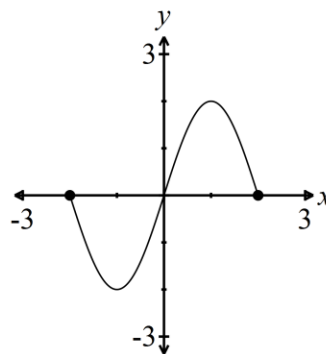


The graph of a function is given. Decide whether it is even, odd, or neither.

25.



26.



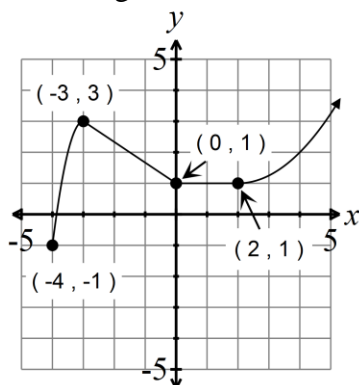
Determine algebraically whether the function is even, odd, or neither.

27.  $f(x) = \frac{2x}{3x^2 - 5}$

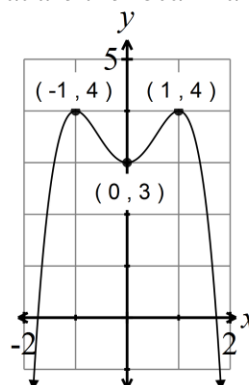
28.  $f(x) = \frac{|x|}{x^2}$

The graph of a function  $f$  is given. Use the graph to answer the question.

29. Find the intervals on which the function is increasing, decreasing, and constant.



30. Find the numbers, if any, at which  $f$  has a local maximum. What are the local maxima?



Graph the function.

31.  $f(x) = \begin{cases} \frac{1}{2}x & \text{if } -4 \leq x < 2 \\ -2x + 5 & \text{if } x \geq 2 \end{cases}$

32.  $f(x) = \begin{cases} x^2 & \text{if } -2 \leq x \leq 2 \\ 2x - 1 & \text{if } 2 < x \leq 5 \end{cases}$

**Graph the function by starting with the graph of the parent function and then using the techniques of shifting, compressing, stretching, and/or reflections.**

33.  $f(x) = |x - 3|$

34.  $f(x) = 3\sqrt[3]{x}$

35.  $f(x) = \sqrt{-x}$

**Write an equation that results in the indicated translation.**

36. The square root function, shifted 2 units downward.

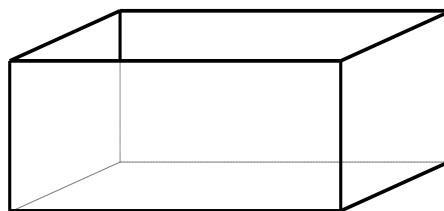
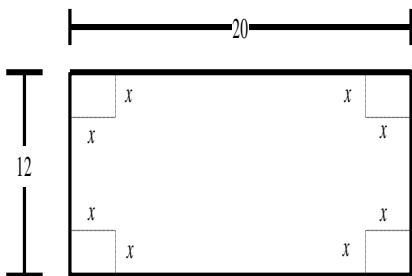
37. The reciprocal function, shifted 3 units to the left.

**Find the function.**

38. Find the function that is finally graphed after the following transformations are applied to the graph of  $y = x^2$ . The graph is shifted left 5 units, stretched vertically by a factor of 2, shifted vertical up 7 units, and finally reflected across the  $x$ -axis.

**Solve the problem.**

39. A box with an open top is to be constructed from a rectangular piece of cardboard with dimensions 12 inches by 20 inches by cutting out equal squares of side  $x$  at each corner and then folding up the sides as in the figure. Express the volume  $V$  of the box as a function of  $x$ .



40. A wire of length  $3x$  is bent into the shape of a square. Express the area  $A$  of the square as a function of  $x$ .